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F. G. Burford
Acting Director
Nuclear Safety & Licensing

CNRO-2007-00007

February 22, 2007

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds

Arkansas Nuclear One, Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-29

REFERENCE: Entergy Operations, Inc. letter CNRO-2007-00003 to the NRC,
Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds,
dated January 31, 2007

Dear Sir or Madam:

In October 2006, while performing inspections of its pressurizer Alloy 600/82/182 butt welds in accordance with MRP-139, a PWR licensee discovered several circumferential indications in its pressurizer surge, safety, and relief nozzles. Because of the importance of this issue, Entergy Operations, Inc. (Entergy) notified the NRC staff of actions planned for Arkansas Nuclear One, Unit 1 (ANO-1) to mitigate Alloy 600/82/182 butt welds on pressurizer spray, surge, and relief lines via the referenced letter.

Regarding Arkansas Nuclear One, Unit 2 (ANO-2), Entergy replaced the ANO-2 pressurizer during the fall 2006 refueling outage (2R18) with one manufactured of materials resistant to primary water stress corrosion cracking (PWSCC). Further inspections to address concerns with Alloy 600/82/182 butt welds are not necessary.

On February 14, 2007, representatives from Entergy and the NRC staff discussed the ANO-1 action plan. As a result of that call, Entergy has revised its action plan and commitments. This letter supersedes the referenced letter.

Entergy will inform the NRC prior to revising any of the committed actions identified in Enclosure 1. Our staff is available to meet with the NRC to discuss any of the information in this letter. Should you have any questions pertaining to this letter, please contact Guy Davant at (601) 368-5756.

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This letter contains commitments identified in Enclosure 2. These commitments supersede those provided in the referenced letter.

Sincerely,



FGB/GHD/ghd

Enclosures: 1. Actions Planned to Mitigate Alloy 600/82/182 Pressurizer Butt Welds at ANO-1
2. Licensee-Identified Commitments

cc: Mr. W. A. Eaton (ECH)
Mr. T. G. Mitchell (ANO)

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ENCLOSURE 1

CNRO-2007-00007

**ACTIONS PLANNED TO MITIGATE
ALLOY 600/82/182 PRESSURIZER BUTT WELDS AT ANO-1**

ACTIONS PLANNED TO MITIGATE ALLOY 600/82/182 PRESSURIZER BUTT WELDS AT ANO-1

Mitigation activities of the pressurizer Alloy 600/82/182 dissimilar metal (DM) butt welds at Arkansas Nuclear One, Unit 1 (ANO-1) have not yet been completed, but are scheduled to be completed during the upcoming spring 2007 refueling outage (1R20). At that time, Entergy will visually inspect and mitigate the pressurizer Alloy 600/82/182 butt welds by installing full structural weld overlays on these welds. The results of these mitigation activities will be reported to the NRC within 60 days following startup from 1R20. Details concerning ANO-1's mitigation activities are provided in Table 1.

In addition, by letter dated January 12, 2007, Entergy Operations, Inc. (Entergy) proposed to the NRC staff an alternative to ASME Code requirements for weld overlay repairs. This request, ANO1-R&R-010, contains details regarding the weld overlay activities. Future inspections of these pressurizer butt weld overlays will be performed in accordance with ANO1-R&R-010.

If ANO-1 should shut down due to primary system unidentified leakage prior to 1R20, Entergy shall either confirm that the leak does not originate from the pressurizer DM butt welds (including quantifying the leak from the suspected location) or will perform, prior to restart, a bare metal visual examination of these weld locations to determine whether the leakage originated at these locations. ANO-1 will report the results of these inspections to the NRC within 60 days of start-up from the associated outage.

Until the pressurizer DM butt welds are mitigated, Entergy will revise the ANO-1 primary system leakage monitoring program to include the following actions:

- If unidentified leakage exceeds either of the two limits below and is sustained for 72 hours, and if the source of the leakage cannot be verified to be from a location other than the pressurizer DM butt welds, then ANO-1 will shut down and perform a bare metal visual examination of all such weld locations.

- 0.25 gpm greater than a baseline value.

- The baseline value should be established using leakage rates measured within 7 days after achieving 100% reactor power following the most recent bare metal visual examination of the pressurizer Alloy 600/82/182 butt weld locations.

- 0.1 gpm increase over the preceding day's 5-day average unidentified leakage.

- Following initiation of a shutdown, the plant shall be in HOT STANDBY in 6 hours and in COLD SHUTDOWN in the next 36 hours.
- Should the leakage increase return to within limits or be confirmed to be from a source other than the pressurizer DM butt welds, then the shutdown actions may be halted and a return to normal operating conditions may commence.

These actions will be incorporated into the ANO-1 primary system leakage monitoring program by March 1, 2007 and remain in place until the mitigation actions for the pressurizer DM butt welds are completed.

The methods of leak detection described above are sufficient to ensure RCS leakage is readily detected and corrective actions initiated prior to conditions degrading to a level resulting in a failure of the RCS pressure boundary.

TABLE 1

Mitigation Summary for ANO-1 Alloy 600/82/182 Pressurizer Butt Welds

Nozzle		MRP-139 Volumetric Inspection Requirement to be Met		Mitigation to be Completed	Comments
Function / Designation	Susceptible Material Description	Outage Designation	Start Date	Outage Designation	
Spray	Nozzle-to-safe end weld, A600 safe end, and safe end-to-pipe weld	1R20	Spring 2007	1R20	Two welds: (1) Carbon steel nozzle welded to A600 safe end; (2) A600 safe end welded to stainless steel pipe. Welds are A600/82/182.
Surge	Nozzle-to-safe end weld only	1R20	Spring 2007	1R20	Carbon steel nozzle to stainless steel safe end using A600/82/182
Electromatic Relief Valve #PSV-1000	Nozzle-to-flange weld only	1R20	Spring 2007	1R20	Carbon steel nozzle to stainless steel flange using A600/82/182
Code Safety Valve #PSV-1001	Nozzle-to-flange weld only	1R20	Spring 2007	1R20	Carbon steel nozzle to stainless steel flange using A600/82/182
Code Safety Valve #PSV-1002	Nozzle-to-flange weld only	1R20	Spring 2007	1R20	Carbon steel nozzle to stainless steel flange using A600/82/182

ENCLOSURE 2

CNRO-2007-00007

LICENSEE-IDENTIFIED COMMITMENTS

LICENSEE-IDENTIFIED COMMITMENTS

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
1. Entergy will inform the NRC prior to revising any of the committed actions identified in Enclosure 1.		✓ Until the end of 1R20	
2. During the upcoming spring 2007 refueling outage at ANO-1 (1R20), Entergy will visually inspect and mitigate the pressurizer Alloy 600/82/182 butt welds by installing full structural weld overlays on these welds.	✓		End of 1R20
3. The results of the ANO-1 mitigation activities will be reported to the NRC within 60 days following startup from 1R20.	✓		60 days following startup from 1R20
4. If ANO-1 should shut down due to primary system unidentified leakage prior to 1R20, Entergy shall either confirm that the leak does not originate from the pressurizer DM butt welds (including quantifying the leak from the suspected location) or will perform, prior to restart, a bare metal visual examination of these weld locations to determine whether the leakage originated at these locations.		✓ Until the end of 1R20	
5. ANO-1 will report the results of the inspections identified in Item #4 within 60 days of start-up from the associated outage.		✓ Until the end of 1R20	

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
<p>6. Until the pressurizer DM butt welds are mitigated, Entergy will revise the ANO-1 primary system leakage monitoring program to include the following actions:</p> <ul style="list-style-type: none"> • If unidentified leakage exceeds either of the two limits below and is sustained for 72 hours, and if the source of the leakage cannot be verified to be from a location other than the pressurizer DM butt welds, then ANO-1 will shutdown and perform a bare metal visual examination of all such weld locations. <ul style="list-style-type: none"> ➤ 0.25 gpm greater than a baseline value. <p>The baseline value should be established using leakage rates measured within 7 days after achieving 100% reactor power following the most recent bare metal visual examination of the pressurizer Alloy 600/82/182 butt weld locations.</p> ➤ 0.1 gpm increase over the preceding day's 5-day average unidentified leakage. <ul style="list-style-type: none"> • Following initiation of a shutdown, the plant shall be in HOT STANDBY in 6 hours and in COLD SHUTDOWN in the next 36 hours. • Should the leakage return to within limits or be confirmed to be from a source other than the pressurizer DM butt welds, then the shutdown actions may be halted and a return to normal operating conditions may commence. 		<p>✓</p> <p>Until the end of 1R20</p>	
<p>7. The actions specified in Item #6, above, will be incorporated into the ANO-1 primary system leakage monitoring program by March 1, 2007 and remain in place until mitigation actions for the pressurizer DM butt welds are completed.</p>	✓		March 1, 2007